

CASE STUDY



PROJECT: Dragline / switchyard retrofill | Australia

ESTER TYPE: MIDEL eN 1204 natural ester (rapeseed / canola)

PURPOSE: Improve asset fire safety and reduce insurance costs

[OVERVIEW]

Bengalla is a single pit open cut mine located in the Sydney basin in Australia. The Bengalla Mining Company has approval to extract 15 million tonnes of coal from the site per annum, and mining operations are conducted using the dragline, truck and excavator method.

In 2020, Bengalla Mining consulted with Ampcontrol, an Australian electrical engineering company (and MIDEL Service Partner); the aim was to reduce fire risk in the mine's switchyard and dragline networks. The prime driver for this work was from an insurance perspective, and the aim was to retrofit ill critical assets:

Dragline electrical network transformer:

- 15MVA 22/6.6kV x 1
- 2.5MVA 22/0.433kV x 1

Switchyard power transformers:

- 15MVA 66/22kV x 2

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[SITUATION]

Amprocontrol recommended replacing the mineral oil in these units with MIDEL eN 1204, a natural ester fluid manufactured from rapeseed crops. The main advantages of using a natural ester fluid would be:

- Increased Fire Safety
- Greater Environmental Protection
- Superior Moisture Tolerance
- Asset Life Extension


At the time of the retrofill project, oil samples were taken from the main tank to obtain the baseline transformer condition. Oil was then drained from the main tank and radiators into an oil tanker for safe disposal. The transformer was allowed to drip down for a time to minimise residual contamination. At the same time minor oil leak repair works were completed.

Residual oil was pumped out from the main tank for safe disposal. At that point full vacuum was applied to the transformer tank and filled with MIDEL eN 1204 natural ester fluid.

[RESULT]

Insurance companies, such as FM Global, acknowledge that all transformers are at risk of failure which can result in fire or environmental damage, and can adversely affect business continuity. They regularly advise their clients to retrofill mineral oil transformers with MIDEL fluids. According to FM Global's installation guide for transformers (datasheet 5-4) and standards such as IEC 61936, using fire-safe approved ester fluids also directly impacts installation considerations, leading to project cost savings.

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“MIDEL’s use in Bengalla is the latest example of how mine operators worldwide are deploying this proven ester technology to improve fire safety and cut insurance costs.”

David Sowden,
Business Development Manager, MIDEL ANZ

The use of MIDEL ester fluids in this project supports the following UN Sustainable Development Goals:

